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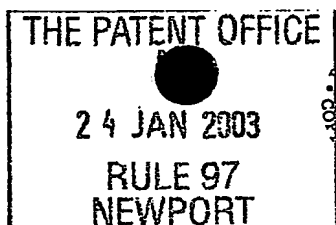
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*A. B. Jones*

Dated

10 December 2003



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The Patent Office

Cardiff Road  
Newport  
South Wales  
NP10 8QQ

# Request for grant of a patent

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24 JAN 2003

1. Your reference

GUARDIAN Sure-Scan LTD.

2. Patent application number

(The Patent Office will fill in this part)

0303814.8

24 JAN 2003

3. Full name, address and postcode of the or of each applicant (underline all surnames)

GUARDIAN Sure-Scan LTD

EDGE LAKE FARM

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MALPAS Cheshire S414 854

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Patents ADP number (if you know it)

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)

Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

a) any applicant named in part 3 is not an inventor, or

b) there is an inventor who is not named as an applicant, or

c) any named applicant is a corporate body.

See note (d))

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**Patents Form 1/77**

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Continuation sheets of this form

Description 5

Claim(s) 2

Abstract 5

Drawing(s) 1 only

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11. I/We request the grant of a patent on the basis of this application.

Signature

Date

12. Name and daytime telephone number of person to contact in the United Kingdom

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## DESCRIPTION OF INVENTION

The invention is an electrically powered unit, utilising electronic scanning mechanisms to obtain information contained in a security thread, which is embedded in a bank note.

There is a need to be able to speedily determine the authenticity of a collective number of bank notes, at a speed normally associated with units that can only be used to count bank notes and verify accurately the amounts counted.

The need is not restricted solely to any one range of currency or indeed any one note and it is the performance of the invention that combines the aforementioned speed counting, with the speed verification as to authenticity.

The invention centres around a revolutionary concept in electronic design which is shown as [ 1 ] in Drawing [1] this would normally, but not necessarily be located in the base of the unit, from which certain provisions are incorporated for the collection and passing on of information is shown by the various connecting lines as shown in Drawing [1] it may be the case that a single connection between variable points in the unit shown as being connected to the Electronic Control Box Drawing [1] [1] be capable of both receiving and passing back information as and when required.

The invention is contained in a moulded case of plastic or similar such materials suitable for the purpose and suitably sealed in an appropriate manner as to prevent entry or intrusion into the invention other than by authorised persons and all items within the moulded case are securely affixed thereto in a suitably appropriate manner.

in Drawing [1] Item [1] Electronic Control Box can readily be described as the brain of the invention by being capable of controlling at all times any one single action carried out by any other single attachment shown in Drawing [1]

The invention would normally be housed in a rectangular shaped box but could should it be required for any purpose be housed in a box of any shape suitable for the purpose.

Normally the box shape containing the invention would be placed on a flat surface and connected to an appropriate power supply which could be either of AC or DC origin.

At the front of the box is for example positioned an open recessed area shown as Item [3] in Drawing [1] in this recessed area is fixed a floating level tray in the horizontal plane. The Floating Level Tray Item [3] drawing [1] is positioned so as to be capable of receiving a determined number, as an example 500 bank notes, these being placed length wise pointing towards the central area of the unit.

The bank notes do not have to be placed in the Floating Level Tray Item [3] Drawing [1] with all notes facing either up or down, simply placed in the tray and centralised.

The Floating Level Tray Item [3] Drawing [1] has mechanisms placed under same which automatically raises the tray to its correct feeding position under Fitted Speed Feeder Wheel Item [4] Drawing [1] so as to maintain contact between the bank notes and the wheel at the correct pressure

The Floating Level Tray Item [3] Drawing [1] would have automatically adjusting side positioners so as to keep the bank notes properly positioned, these would automatically come into action once the Start Button Item [9] Drawing [1] had been pressed. A signal would be sent to electronic

mechanisms within Floating Level Tray [3] Drawing [1] to bring this into effect so as to secure the pile of bank notes at the correct level under feed wheel Item [4] Drawing [1]

Once in the correct position the Feed Wheel [4] in Drawing [1] sends an electronic signal to the Electronic Control Box Item [1] in Drawing [1] which in turn opens all circuits within the invention.

The Electronic Control Box Item [1] Drawing [1] activates the Electronic Scanners and Receivers Item [2] Drawing [1] and engages the Electronic Drive Motor Item [5] Drawing [1] which turns the Fixed Speed Feeder Wheel Item [4] Drawing [1] the wheel being manufactured from any suitable material capable of registering a firm contact with the top bank note resting in the Bank Note Feed Tray Item [3] Drawing [1] the feeder drive wheel rotates anti clockwise and feeds the bank note onto the Bank note positioning tray Item [3a] on Drawing [1] which has its own overhead drive wheel, driven from the Electronic Motor Item [5] Drawing [1] working in unison with the Fixed Speed Feeder Wheel Item [4] in Drawing [1] to ensure continuous progression of the bank note through the Electronic Scanners and Receivers Item [2] Drawing [1].

The Scanners and Receivers Item [2] Drawing [1] could be single, double or triple units, connected either singly, doubly or triplicate to the Electronic Control Box Item [1] Drawing [1] and so positioned within the unit as to be capable of scanning information contained in the security thread of a bank note. Bank notes pass through one, two or three sets of Scanners and Receivers as may be the case required. Having scanned the bank note as it passes through the Electronic Scanners and Receivers Item [2] Drawing [1] and established the required information from the security thread, the Electronic Scanners and Receivers Item [2] Drawing [1] passes the information directly to the Electronic Control Box [1] Drawing [1] which causes to be made an instantaneous comparison with the particulars of a genuine bank note.

If the scanned information is deemed to be identical to that of a genuine note, a signal is sent from the Electronic Control Box Item [1] Drawing [1] to the Electronic Note Switch Mechanism Item [6] on Drawing [1] dependant upon the authenticity of the scanned note, the Electronic Switch Mechanism will operate a tray mechanism allowing the authentic notes to slide into the Good Note Tray Item [7] Drawing [1], counterfeit notes, or notes having been found as not complying to required standards are similarly feed into the Counterfeit Note Tray Item [8] Drawing [1], both the aforementioned trays Items [7] and [8] Drawing [1] are fitted with electronic sensors thereby allowing the number of notes falling into each tray to be counted and the numbers displayed in Items [7a] and [8a] in Drawing [1]

On completion of the required task, the invention automatically switches off after a delay time of thirty seconds with an alarm sounding to indicate completion of task.

## **SUMMARY:**

A pile of bank notes from any country is placed into Bank Note Feeder Tray Item [3] Drawing [1] a start button is pressed which automatically allows an Electronic Control Box Item [1] Drawing [1] to activate all component parts of the invention. The bank notes are fed through the level tray position by means of speed wheels which pass the bank notes through a series of Electronic Scanners and Receivers Item [2] Drawing [1]. The scanners pass light through the security thread and reads the information contained therein, converts the information to binary code and sends the information directly to the Electronic Control Box Item [1] Drawing [1] which in turn makes an immediate comparison with information from genuine bank notes.

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
The Electronic Control Box then send an instruction to a Switch Mechanism Item [2] Drawing [1] which automatically sorts the bank notes into the appropriate Good or Bad Note Trays Items [7 & ] Drawing [1]

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## CLAIMS FOR INVENTION

1. The invention is new
2. The invention has a self adjusting feed tray which automatically keeps the bank notes in contact with the automatic feed wheel.
3. The invention facilitates the determination as to whether or not bank notes passed through the invention are genuine or otherwise.
4. The determination as to whether a bank note is genuine or not is 100%
5. The invention can operate to examine 500 bank notes in 60 seconds with complete accuracy.
6. The invention can determine bank notes of all denominations from listed countries, which include the EU and USA
7. The invention is a self controlled automatic unit that not only verifies the authenticity of bank notes, but separates counterfeit from the genuine notes.
8. The invention separately counts the amounts of genuine and counterfeit notes and displays volumes.
9. The invention has an automatic cut off after use based on a 30 second time delay.
10. The invention can be used continuously to examine large volume amounts of bank notes.



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## ABSTRACT

The counterfeiting and passing off, of counterfeit bank notes is now generally recognised throughout the world as being a major problem, particularly for the EU and Western economies.

The problems lie in the fact that the criminal element within society has ready access to sophisticated scanning and printing equipment, sufficient for the purposes of producing counterfeit bank notes, which, without very careful, and in some instances laboratory examination cannot be proved to otherwise than genuine bank notes.

The security aspects of genuine bank notes vary from country to country but in the main rely on #1 The feel of the paper #2 The colour and quality of the printing on the note #3 variable holograms #4 Security thread. #5 On some bank notes, the presence of a discernable water mark as in the case of Bank of England notes, which bear the head of Her Majesty The Queen. #6 Unseen patterns that only become visible when viewed under ultra violet or red lamps #7 A special type of varnish that is used to (a) give a bank note that special feel and (b) extend the life period of the note.

With the noted exception of #4 above, the rest detailed present no problems to the established counterfeiting rings in overcoming.

High quality printing equipment, in some cases identical to those used for the manufacture of genuine notes, are purchased to be used, so as to give the continuity and quality demanded. Inks used in genuine notes are determined by the use of a spectrometer or other method of analysis and it is then a simple matter of replication, a similar pattern emerges in respect of the varnish used. The implementation of a water mark is simplicity itself and any 'A' level student, would within a very short time be able to produce same.

J

Availability of huge funding, which is the case, allows the counterfeiters to acquire paper which is virtually identical to the paper used in genuine notes, but most certainly after varnish treatment, it would take an expert to determine the authenticity of a bank note.

The only problem that confronts counterfeiters, and will continue to do so, is the implementation of the security thread which runs in the vertical plane through most bank notes. More and more countries are turning to the use of the security thread as a means of being able, at first hand, to distinguish counterfeit from genuine notes.

These security threads are in instances manufactured from metal, ceramics, polymers, plastics or a combination of any of these. Printed onto the thread are details of the issuing bank and the denomination of the value of the note. Not all information is printed in a similar manner, as in the case of certain ranges of US dollars, the printing is direct and alternatively opposed. Italian bank notes having two variable width strips in notes. There are several variations used, but in the main, the method is a simple single strip in the vertical plane.

Banks throughout the World have in the past tended to present a united front that counterfeit notes and the virtual existence of counterfeit notes was so small as to be non existent, but this is now known not to be true.

Publications internationally, throughout Europe, USA and Africa, report alarming rises in the volumes of counterfeit notes seized or recovered and Law Enforcement Agencies throughout the World are now alerted to the ever increasing problem. Banks themselves admit to having committed offences of having passed off counterfeit notes, simply because notes passing over the counters are not checked, in some instances, as with Post Offices, volumes can be very high, and in the main, the re issuance of counterfeit notes have

come from companies involved in collecting large volumes of cash from banks and making up cash payrolls.


The Bank of England in the Broad sheet Press in 2001 admitted that as much as 1% of all notes in circulation in the UK could be considered to be counterfeit, and that at any given time, some £27 billion was in circulation.

The USA also admits to major counterfeiting problems and confirm that organised crime, with their established tentacles throughout the world, are responsible for the spread of counterfeit notes throughout the world.

More recently with the introduction of the Euro, the crime syndicates were presented with an opportunity to introduce large volumes of counterfeit Euro's, not only in Europe, but as the Euro is becoming accepted internationally, so the opportunities are increasing. The major problems associated with the Euro is that despite appearing similar, there are notable differences with each country having incorporated its own designs, so we now have some teens of designs on similar notes, which nobody recognises immediately, nor could they be expected to do so. In many countries throughout the World, the general populace and indeed sections of commerce and industry have absolutely no idea what a Euro looks or feels like, nor what they should be looking for.

The major problem now facing Governments and Financial Institutions of the World is that there will, in the immediate future be only three currencies acceptable around the World, in addition to the home currency of the accepting country. These are #1 The English Pounds #2 The US Dollars #3 Euro's.

The Banks are fully aware of the ramifications as are International Law Enforcement Agencies, but basically are powerless to stop the growth in counterfeiting. South Africa is considering introducing legislation that makes



  
the passing off, of counterfeit notes, whether knowingly or unknowingly a very serious offence with substantial penalties. South Africa, although being a developing country, is to a large extent, reliant on tourism from Europe and the USA, and has now published details of large volumes of counterfeit currency being taken by commercial interests throughout South Africa.

Interpol and the European Monetary Institute admit to the growing problem of counterfeiting and the need to effect an immediate response in an effort to reduce and eventually stop the printing of counterfeit bank notes.

It is seen that the problem should be approached from the point of view of enabling small businesses and individuals to determine the authenticity of bank notes when they are taken or received as payment for goods or services and to this end a whole new technology has been developed based on being able to instantaneously read the information contained on security threads and compare the received information with information known as being genuine, taken from genuine bank notes.

The second part of the problem lies with receiving or dealing in large volumes of bank notes, where it would be virtually impossible, through lack of time, cost, and other relevant matters, to examine every individual note and determine its authenticity.

The need for speed and simplicity in being able to check the authenticity of a large volumes of bank notes is paramount in providing the aforementioned Financial Institutions and Banks with a cost effective method of being able to examine thousands of notes in minutes and accurately determine whether or not the bank note is genuine. In this way Financial Institutions and Banks would [a] be able to readily identify the source from which the funds came [b] remove and retain counterfeit notes, thereby preventing their recalculation to the general public [c] provide valuable information to Law Enforcement Agencies [d] enhance international confidence in certain currencies.

 Banks already utilise speed counters to count volumes of bank notes in every day work, and these have been found to be very successful and accurate. It is this technology which needs incorporating into recently technologies centred around determining the authenticity of notes, whilst not increasing the time normally taken in the single process of bank note counting. 

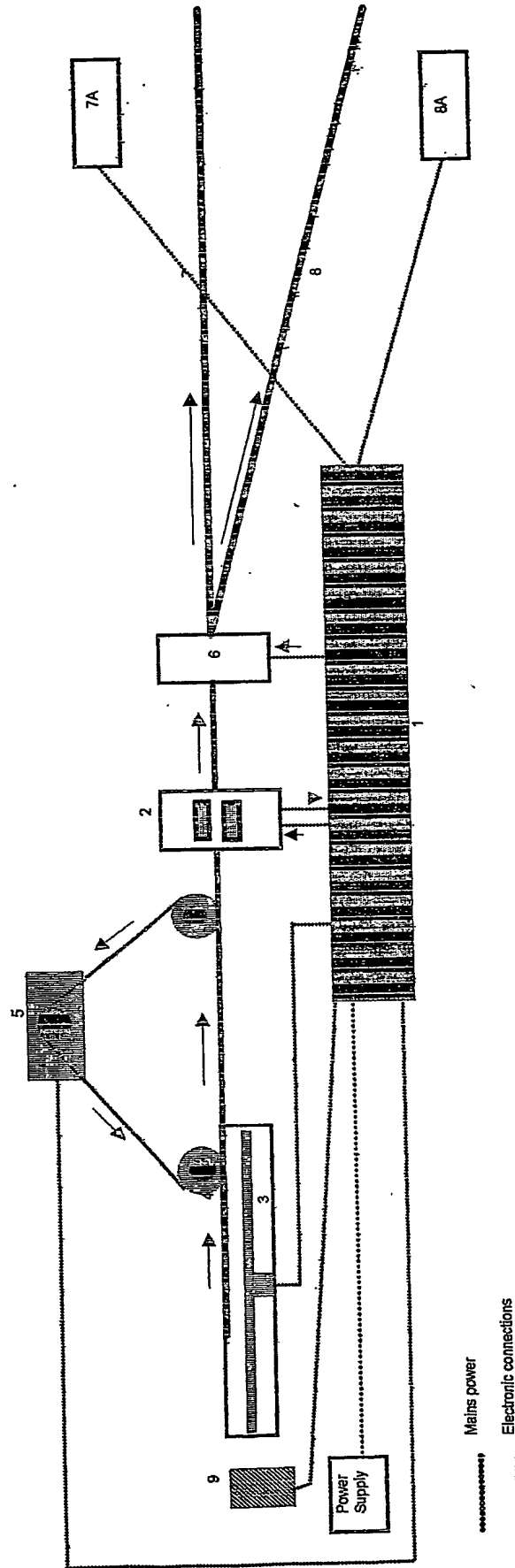
The receipt of large volume bank notes by Financial Institutions and Banks, does not normally occur at a counter, it is more the normal procedure, for security purposes alone, to arrange special deliveries.

There does already exist certain technology incorporating photosynthesis used for the purpose of scanning bank notes accurately, but this is slow, time consuming, disproportionately expensive, being too large to use in confined spaces.

Financial Institutions, Banks and Law Enforcement Agencies world wide, place no credence in the low cost technologies associated with ultra violet and are seeking an acceptable solution, this has to encompass the very latest electronics technology and be capable of instantly being put into use with little or no training..

HIGH SPEED BANK NOTE VERIFIER

DRAWING ONE SIDE ELEVATION



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